

Name: \_\_\_\_\_

Per: \_\_\_\_\_

## The Periodic Table & Chemical Bonding WS 1 “Ions”

Complete the following:

1. For each of the positive ions listed in column 1, use the periodic table to find in column 2 the **total number of electrons** that ion contains. The same answer may be used more than once.

- |                            |       |
|----------------------------|-------|
| _____ 1. $\text{Al}^{+3}$  | A. 2  |
| _____ 2. $\text{Fe}^{+3}$  | B. 10 |
| _____ 3. $\text{Mg}^{+2}$  | C. 21 |
| _____ 4. $\text{Sn}^{+2}$  | D. 23 |
| _____ 5. $\text{Co}^{+2}$  | E. 24 |
| _____ 6. $\text{Co}^{+3}$  | F. 25 |
| _____ 7. $\text{Li}^{+1}$  | G. 36 |
| _____ 8. $\text{Cr}^{+3}$  | H. 48 |
| _____ 9. $\text{Rb}^{+1}$  | I. 76 |
| _____ 10. $\text{Pt}^{+2}$ | J. 81 |

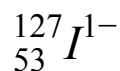
2. For each of the following ions, indicate the total number of protons and electrons in the ion.

| Ion              | Number of Protons | Number of Electrons |
|------------------|-------------------|---------------------|
| $\text{Co}^{+2}$ |                   |                     |
| $\text{Co}^{+3}$ |                   |                     |
| $\text{Cl}^{-1}$ |                   |                     |
| $\text{K}^{+1}$  |                   |                     |
| $\text{S}^{-2}$  |                   |                     |
| $\text{Sr}^{+2}$ |                   |                     |
| $\text{Al}^{+3}$ |                   |                     |
| $\text{P}^{-3}$  |                   |                     |

3. For each of the following atomic numbers, use the periodic table to write the element shorthand (including the charge) for the simple ion that the element is most likely to form.

a. 53

d. 88



b. 38

e. 9

c. 55

f. 13

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4. Write the element shorthand for the ion with 12 protons and 10 electrons.

5. Write the element shorthand for the ion with 74 protons and 68 electrons.

6. Write the element shorthand for the ion with 95 protons and 89 electrons.

7. Write the element shorthand for the ion with 33 protons and 36 electrons.

8. How many protons, neutrons, and electrons are present in the  $^{59}_{28}\text{Ni}^{+2}$  ion?

p<sup>+</sup>: \_\_\_\_\_ n: \_\_\_\_\_ e<sup>-</sup>: \_\_\_\_\_

9. How many protons, neutrons, and electrons are present in the  $^{91}_{40}\text{Zr}^{+4}$  ion?

p<sup>+</sup>: \_\_\_\_\_ n: \_\_\_\_\_ e<sup>-</sup>: \_\_\_\_\_

10. How many protons, neutrons, and electrons are present in the  $^{140}_{58}\text{Ce}^{+3}$  ion?

p<sup>+</sup>: \_\_\_\_\_ n: \_\_\_\_\_ e<sup>-</sup>: \_\_\_\_\_

11. How many protons, neutrons, and electrons are present in the  $^{79}_{34}\text{Se}^{-2}$  ion?

p<sup>+</sup>: \_\_\_\_\_ n: \_\_\_\_\_ e<sup>-</sup>: \_\_\_\_\_

12. How many protons, neutrons, and electrons are present in the  $^{12}_6\text{C}^{-4}$  ion?

p<sup>+</sup>: \_\_\_\_\_ n: \_\_\_\_\_ e<sup>-</sup>: \_\_\_\_\_

13. Write the complete element shorthand for the ion with 84 protons, 125 neutrons, and 80 electrons.

14. Write the complete element shorthand for the ion with 27 protons, 32 neutrons, and 25 electrons.

15. Write the complete element shorthand for the ion with 73 protons, 108 neutrons, and 68 electrons.